Name: Date:

Polynomial Factoring solution (version 691)

1. **The quadratic formula says if $ax^2 + bx + c = 0$ then $x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$. Use the quadratic formula to solve the following equation.**

$$x^2 + 4x + 24 = 0$$

Simplify your answer(s) as much as possible.

Solution

$$x = \frac{-(4) \pm \sqrt{(4)^2 - 4(1)(24)}}{2(1)}$$

$$x = \frac{-(4) \pm \sqrt{16 - 96}}{2(1)}$$

$$x = \frac{-4 \pm \sqrt{-80}}{2}$$

$$x = \frac{-4 \pm \sqrt{-16 \cdot 5}}{2}$$

$$x = \frac{-4 \pm 4\sqrt{5}\, i}{2}$$

$$x = -2 \pm 2\sqrt{5}\, i$$

Notice that i in NOT under the square-root radical symbol!!

2. **Express the product of $5 - 4i$ and $-9 + 6i$ in standard form $(a + bi)$.**

Solution

$$(5 - 4i) \cdot (-9 + 6i)$$

$$-45 + 30i + 36i - 24i^2$$

$$-45 + 30i + 36i + 24$$

$$-45 + 24 + 30i + 36i$$

$$-21 + 66i$$

Polynomial Factoring solution (version 691)

3. **Write function $f(x) = x^3 + x^2 - 10x + 8$ in factored form. I'll give you a hint: one factor is $(x - 1)$.**

Solution

	1	1	-10	8
1		1	2	-8
	1	2	-8	0

$$f(x) = (x-1)(x^2+2x-8)$$

$$f(x) = (x-1)(x+4)(x-2)$$

4. **Polynomial p is defined below in factored form.**

$$p(x) = -(x+7)\cdot(x+2)^2\cdot(x-1)\cdot(x-6)$$

Sketch a graph of polynomial $y = p(x)$.